

ORDER NO. KM40201786C2

Service Manual

Telephone Equipment

KX-TS100EXW

Integrated Telephone System

White Version

(for Europe)



SPECIFICATIONS

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Power Source:	Telephone line voltage
Dial Speed:	Tone (DTMF)
Redial:	Last dialed telephone number
Speaker:	Handset; 3 cm (1 ¹³ / ₁₆ ") PM dynamic type 150 Ω
Microphone:	Electret condenser microphone
Dimensions:	6 ⁹ / ₁₆ " × 8 ¹³ / ₁₆ " × 3 ³ / ₄ " (167 × 224 × 95 mm)
Weight:	1.3 lbs. (590g)

Design and specifications are subject to change without notice.



WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

When you note the serial number, write down all 11 digits. The serial number may be found on the bottom of the unit.

FOR SERVICE TECHNICIANS

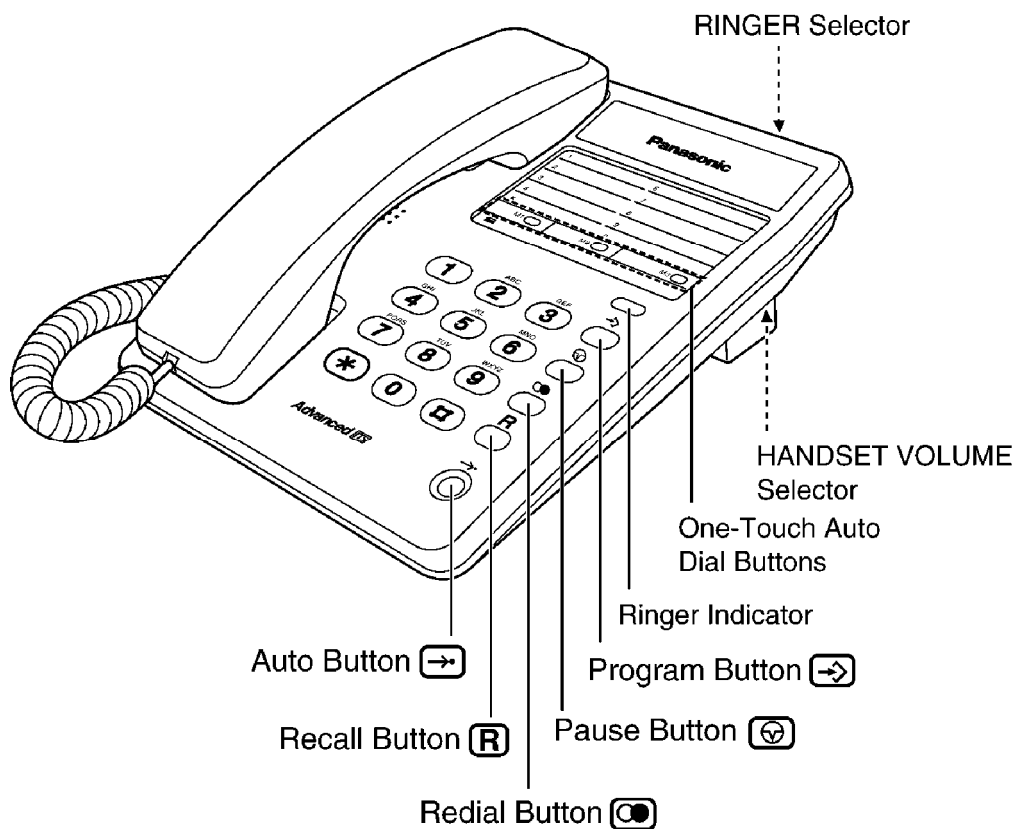
ICs and LSIs are vulnerable to static electricity.

When repairing, the following precautions will help prevent recurring malfunctions.

1. Cover plastic parts boxes with aluminum foil.
2. Ground the soldering irons.
3. Use a conductive mat on worktable.
4. Do not grasp IC or LSI pins with bare fingers.

Panasonic

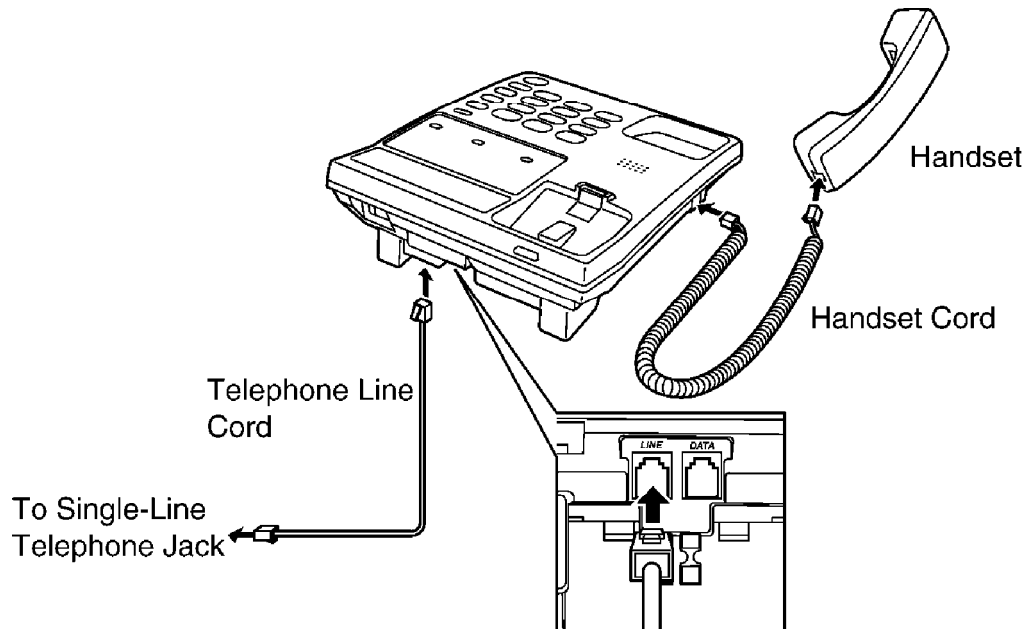
1. LOCATION OF CONTROLS



2. CONNECTION

2.1. Connecting the Handset/Telephone Line Cord

After connection, lift the handset to check for a dial tone.

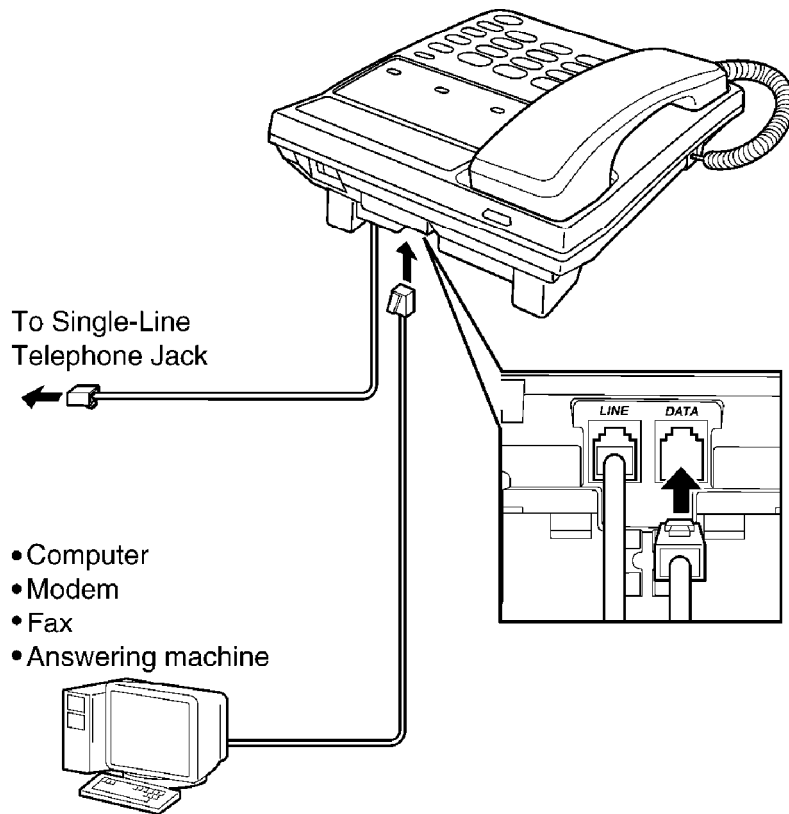


- Use only a Panasonic Handset for the KX-TS100EXW.

2.2. Connecting a Communication Device

If you connect a communication device (computer, modem, fax, answering machine, etc.) to the telephone line, you can connect it through this unit using the DATA jack.

After connecting the handset and telephone line cord (see above), connect the communication device telephone line cord to the DATA jack.

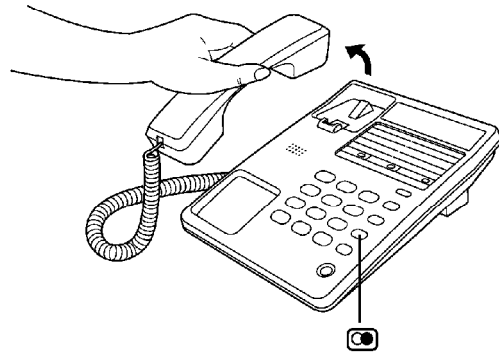


- Make sure the communication device is not in use before using this unit (making calls, storing phone numbers in memory etc.) or the communication device may not operate properly.


3. OPERATIONS



3.1. Making Calls

- 1 Lift the handset.
- 2 Dial a phone number.
 - If you misdial, hang up and start from step 1.
- 3 When finished talking, hang up.



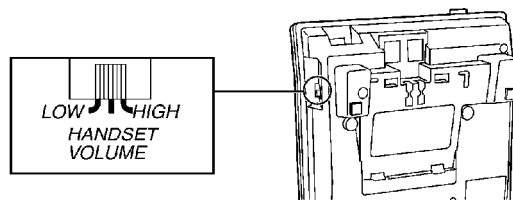
To redial the last number

Lift the handset. ➔ Press .

- While lifting the handset, each time you press , the line will be automatically disconnected and the number will be redialed.
-  will dial the last number you called manually, not a Speed Dialer number or One-Touch Dialer number.

To select the receiver volume

Set the HANDSET VOLUME selector to HIGH, MEDIUM (preset) or LOW.

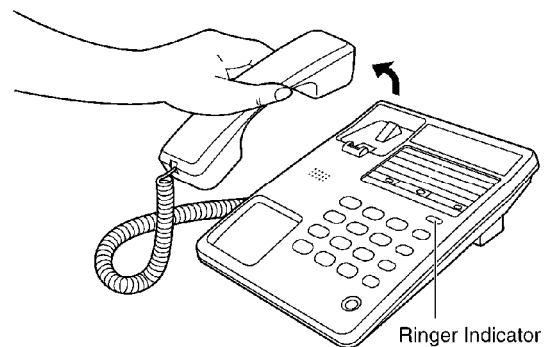


3.2. Answering Calls

While a call is being received, the unit rings and the ringer indicator flashes.

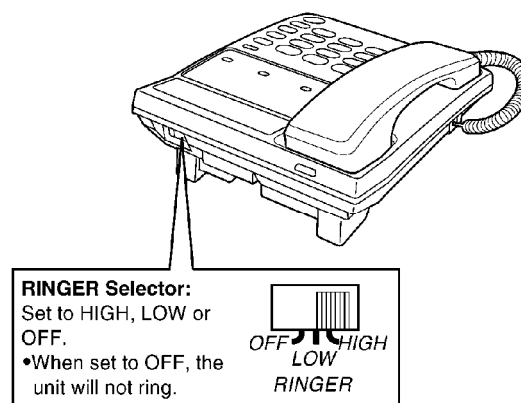
1 When the unit rings, lift the handset.

2 When finished talking, hang up.

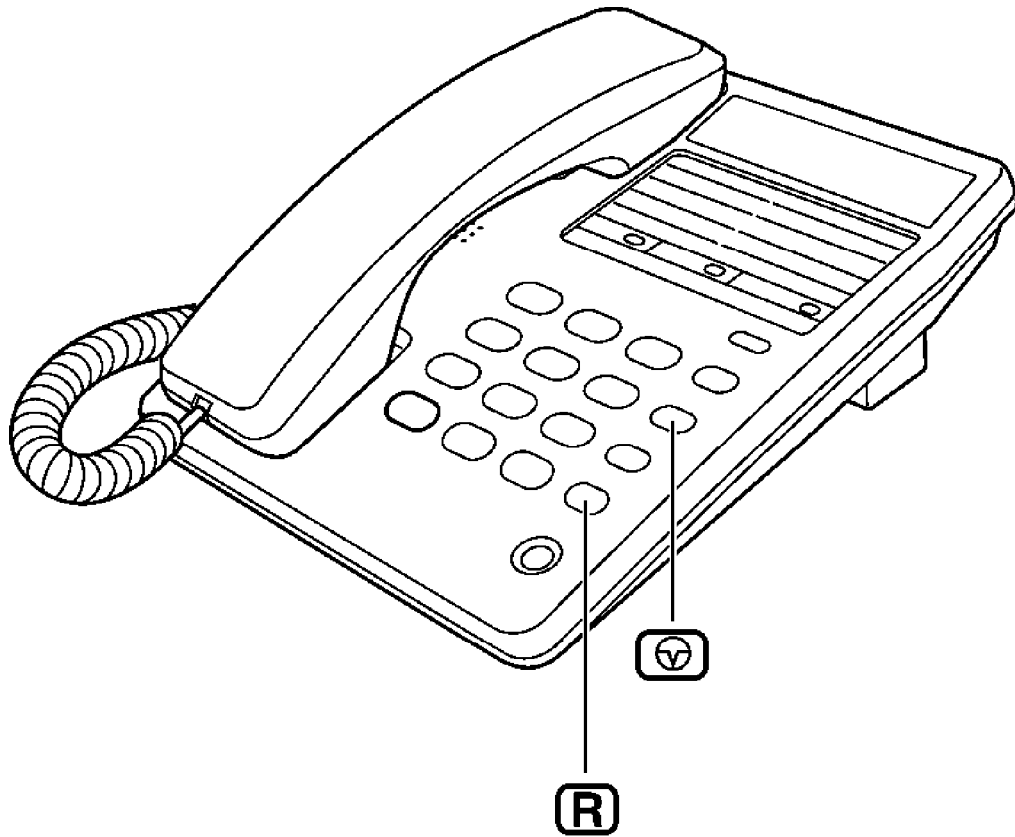


• While the ringer volume is set to OFF (see below), the unit will not ring.

To select the ringer volume



4. SPECIAL FEATURES



4.1. RECALL Button

Pressing **R** allows you to use special features of your host PBX such as transferring an extension call or accessing special telephone services (optional) such as call waiting.

4.2. How to Use the PAUSE Button (For Analog PBX Line/Long Distance Service Users)

We recommend you press **⏸** if a pause is required for dialing with a PBX or to access a long distance service.

Ex. Line access number **9** (PBX)

9 → **⏸** → Phone number

- Pressing **⏸** once creates a few seconds pause.
This prevents misdialing when you redial or dial a stored number.
- Pressing **⏸** more than once increases the length of the pause between numbers.

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5. DISASSEMBLY INSTRUCTIONS

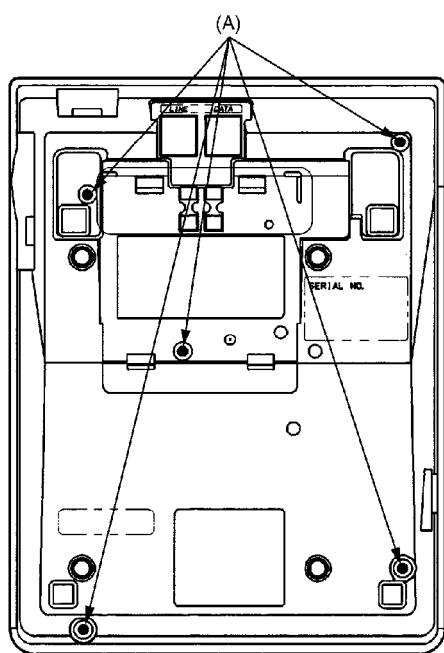


Fig. 1

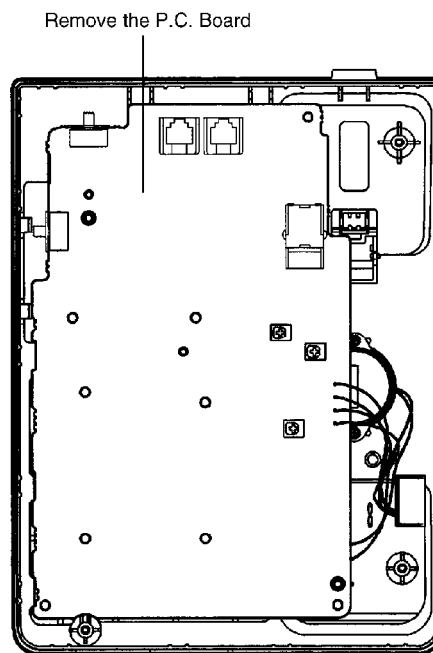


Fig. 2

Ref. No.	Procedure	Shown in Fig —.	To remove —.	Remove —.
1	1	1	Lower Cabinet	Screws (2.6 × 12)..... (A) × 5
2	1 ~ 2	2	Printed Circuit Board	Remove the P.C.Board

6. HOW TO REPLACE FLAT PACKAGE IC

6.1. Preparation

- SOLDER

Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA

- Soldering iron

Recommended power consumption will be between 30 W to 40 W.

Temperature of Copper Rod $662 \pm 50^{\circ}\text{F}$ ($350 \pm 10^{\circ}\text{C}$)

(An expert may handle between 60 W to 80 W iron, but beginner might damage foil by overheating.)

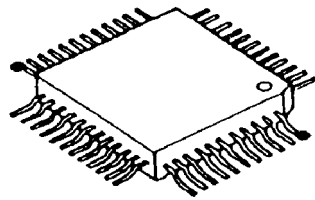
- Flux

HI115 Specific gravity 0.863.

(Original flux will be replaced daily.)

6.2. Procedure

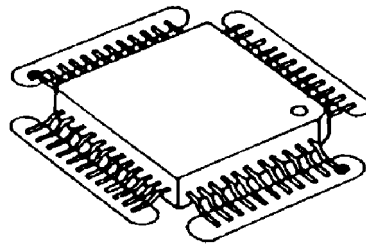
1. Temporary fix FLAT PACKAGE IC by soldering on two marked 2 pins.



● - - - - - Temporary soldering point.

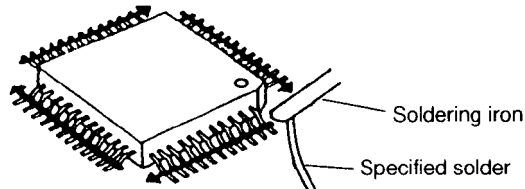
*Most important matter is accurate setting of IC to the corresponding soldering foil.

2. Apply flux for all pins of FLAT PACKAGE IC.



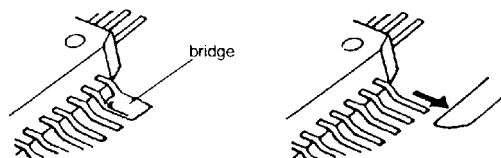
----- Flux

3. Solder employing specified solder to direction of arrow, as sliding the soldering iron.

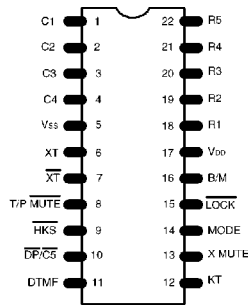


6.3. Modification Procedure of Bridge

1. Re-solder slightly on bridged portion.
2. Remove remained solder along pins employing soldering iron as shown in below figure.



7. CPU DATA



IC1: C1CA00000250
Clock frequency: 3.58MHz
Operating Voltage: 2.0 ~ 5.5V

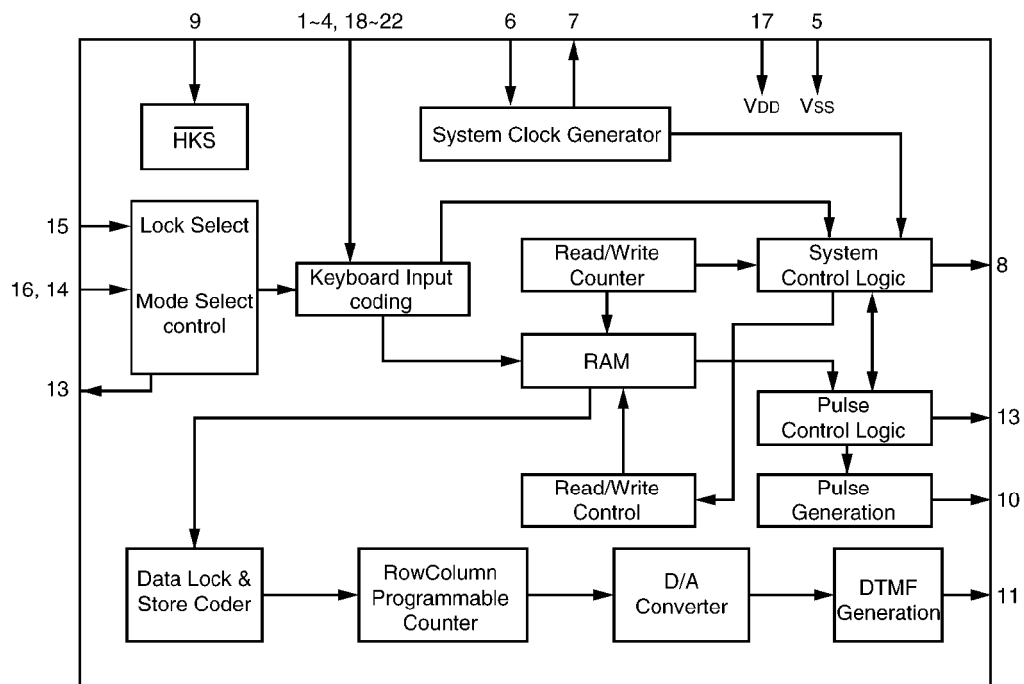
Pin Description

Symbol	22 Pin	I/O	Function								
Row/column input	1~4,18~22	I	A valid key entry is defined by a single row being connected to a single column.								
\overline{XT} , XT	6,7	I/O	Oscillation I/O								
T/P MUTE	8	O	The T/P MUTE is a conventional CMOS N-channel open drain output. When dialing and flash, the output is and will turn down the talking network.								
MODE	14	I	Dialing mode selection. When pin is connected to V _{SS} , it is double tone multi-frequency mode when it is connected to V _{DD} , it is pulse mode (10ppS).								
\overline{HKS}	9	I	The pin is the hook switch input. HKS = 1, on \overline{HOOK} state, chip in sleeping mode, no operation HKS = 0, off \overline{HOOK} state, enable chip on normal operation.								
B/M	16	I	Break/make ratio can be selected by this pin B/M = 1, ratio is 60/40; B/M = 0, ratio is 66/33.								
V _{DD} , V _{SS}	17, 5	I	Power and power ground input.								
X MUTE	13	O	Inverter output. Dialing under double tone mode, pin is high voltage; if dialing under pulse mode, the pin is low voltage.								
KT	12	O	Key tone signal output. The frequency is 1.2 kHz.								
\overline{LOCK}	15 (BL1102L)	I	Once the pin is locked, dialing starting with "0" or "9" and all the key input afterwards will become invalid. It will recover the original state after on hook. <table><tr><td>LOCK Pin</td><td>function</td></tr><tr><td>V_{DD}</td><td>"0" or "9" dialing inhibited</td></tr><tr><td>floating</td><td>normal</td></tr><tr><td>V_{SS}</td><td>"0" dialing inhibited</td></tr></table>	LOCK Pin	function	V _{DD}	"0" or "9" dialing inhibited	floating	normal	V _{SS}	"0" dialing inhibited
LOCK Pin	function										
V _{DD}	"0" or "9" dialing inhibited										
floating	normal										
V _{SS}	"0" dialing inhibited										
NC	15 (BL1102)	I	Not available								
$\overline{DP/C5}$	10	O	Open drain output. Under tone state. Output will keep high impedance; Under pulse state, output dialing pulse.								
DTMF	11	O	Double tone multifrequency signal output.								

8. TERMINAL GUIDE OF THE ICs TRANSISTORS AND DIODES

 C1CA00000250	 2SC2120 2SA1625, 2SA1626 PQVT2N6517CA	 PQVILS1240A	 MA4180, MA4056	 1SS119
 UN5113 2SD1819A PQVTFB1A4M	 PQVDS1YB60F1	 PQVDHZS3A1	 PQVDSML210LT	

9. IC BLOCK DIAGRAM



10. OPTION JUMPER TABLE

10.1. Dialing Mode SW

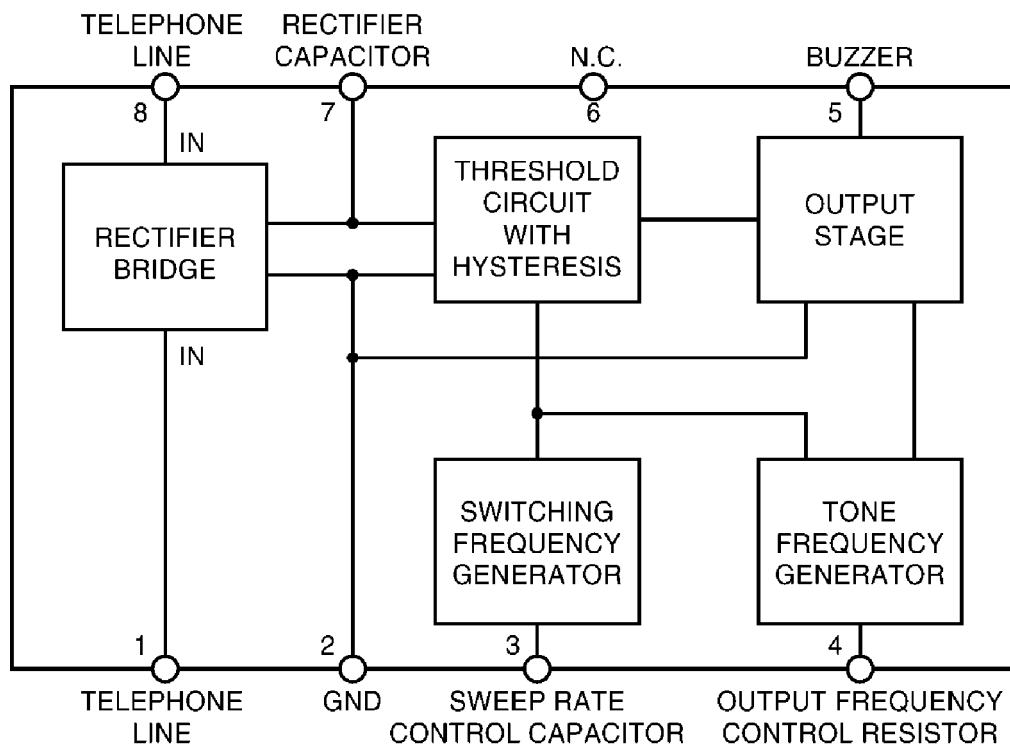
IC1

SW Position	
Pin 14 LOW → Tone dialing	10 pps
Pin 14 High → Pulse dialing	

10.2. Flash Key

Flash time	Option	
98 ms	J1	
305 ms	J2	
600 ms	J3	default

11. BLOCK DIAGRAM (IC2)



12. CIRCUIT OPERATIONS

Note: The circuit diagram may be modified at any time with the development of new technology.

12.1. Telephone Line Interface

When the hook switch SW1 is ON (off-hook), the circuit is closed, and current is supplied to the base of Q2 via the diode bridge D1 and Q2 is On \rightarrow Q1 is ON (OFF-HOOK condition).

12.2. Tone Dial Circuit

Function:

The tone dialing circuit consists of a DTMF (Dual Tone Multi Frequency) signal generator (outputted from Pin 11 of the IC1) for tone dialing, and also a circuit for outputting the signal to line.

The DTMF circuit identifies inputs from the 12 keys (1,2,3,4,5,6,7,8,9,0, * and #) by means of a total of seven frequencies, that is four low frequencies (Low group) and three high frequencies (High group).

Circuit Description:

When a dial key is pressed, a DTMF signal is output from Pin 11 of IC1 as an analog synthetic wave.

The signal flow to the line is as follows.

Pin 11 of IC1 \rightarrow R37 \rightarrow Q9 \rightarrow Q3 \rightarrow Q1 \rightarrow Tel Line.

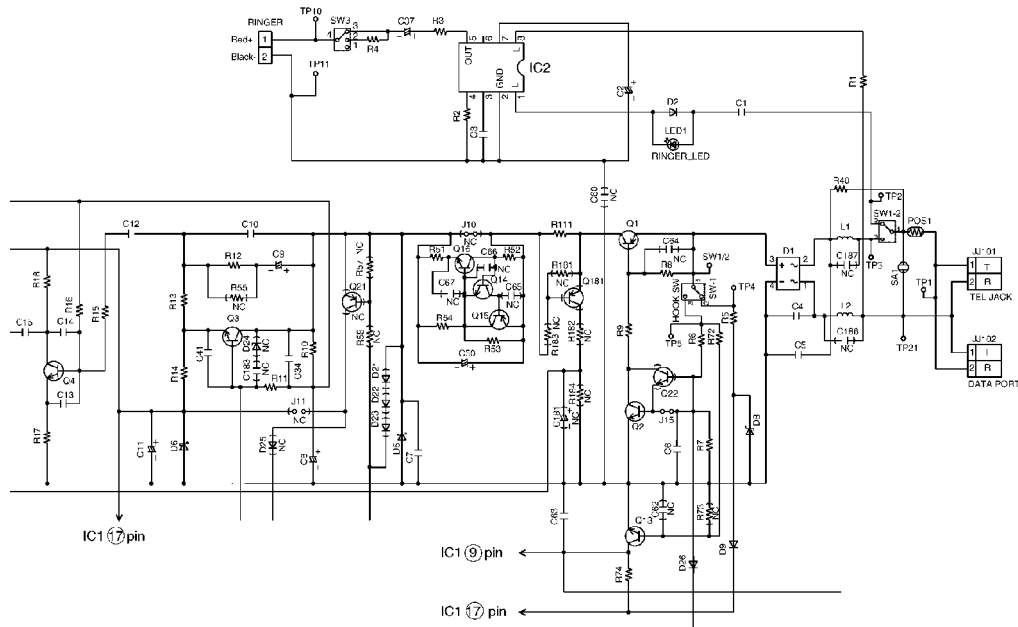
The DTMF signal is sent to the line via the following path. Q9 and Q3 is an amplifier which is used

to output the signal to line.

Shown below is the signal flow used to output the DTMF signal from the handset as a monitor tone when a dial key is pressed.

Pin 11 of IC1 → R48 → C33 → Q7 → C18 → Handset Speaker.

The signal combination and frequency corresponding to each dial key is shown on next page.



Tone Frequencies

High Group Low Group	H1	H2	H3
L1	1	2	3
L2	4	5	6
L3	7	8	9
L4	*	0	#

Low Group	Frequencies	High Group	Frequencies
L1	697 Hz \pm 1.5%	H1	1209 Hz \pm 1
L2	770 Hz \pm 1.5%	H2	1336 Hz \pm 1
L3	852 Hz \pm 1.5%	H3	1477 Hz \pm 1
L4	941 Hz \pm 1.5%	-----	-----

12.3. Ringer Circuit

Circuit Operation:

The bell signal passes through C1 (R1) → supplying power to pin 1 of IC2.

The ring signal is output from Pin 5 of IC2, and its volume is adjusted in 3 steps (H-L-OFF) by

SW3 then impressed on the ceramic sound generator, and so is generated. Output frequency is controlled by R2 and C3 following below formula.

$$R2 = \frac{2 \cdot 72 \cdot 10^4}{f_2 \text{ (CH2)}} \times (1 \cdot 0.04 \ln \frac{f_1}{1943})$$

$$f_2 = 0.725 f_1$$

$$f_{\text{swcep}} = \frac{750}{C3 \text{ (nF)}}$$

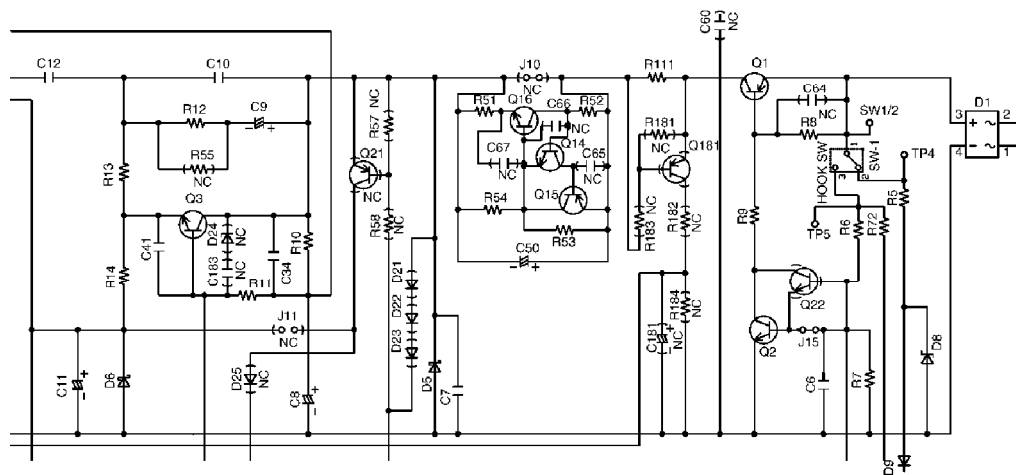
12.4. Power Circuit and Redial Back-up Circuit

Function:

This set is powered from the line. When it is an OFF-HOOK status, Tel Line → D1 → Q1 → R14 → pin 17 of IC1 (to become the power supply for IC1 speech network).

The voltage from the line is turned into a constant voltage by D6 and then supplied to the IC1 and sending and receiving circuit of the set.

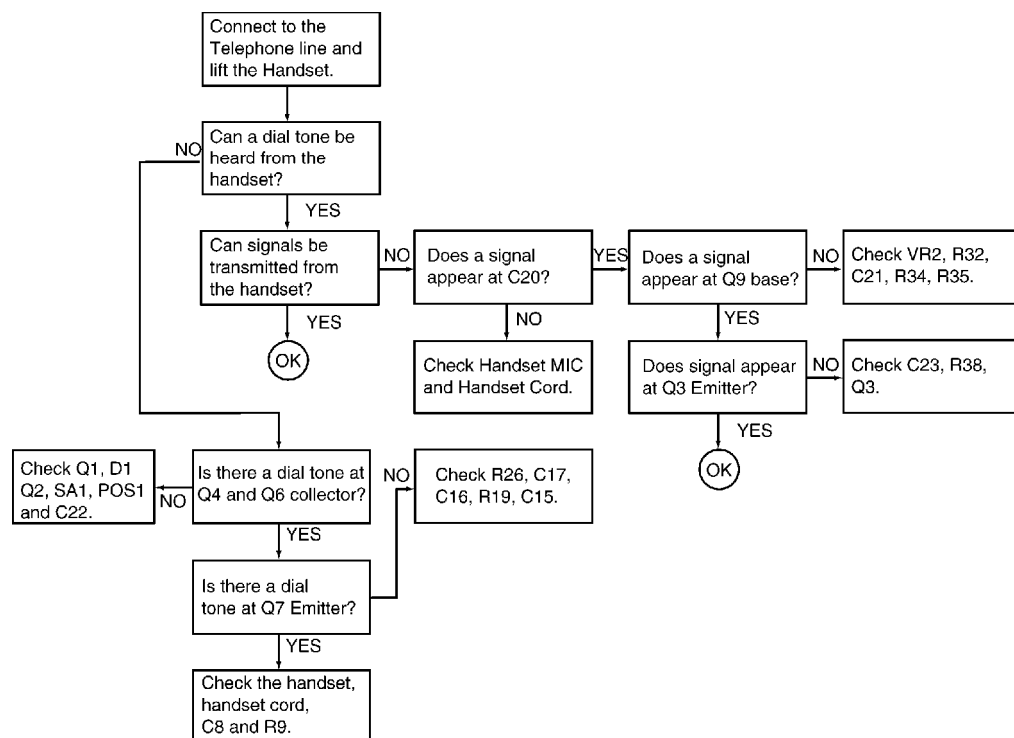
At ON-HOOK status the voltage from the line via R40, R5 is turned into a constant voltage by D8, and then become power supply for IC1 (Pin17), and the redial Back-up will be done.



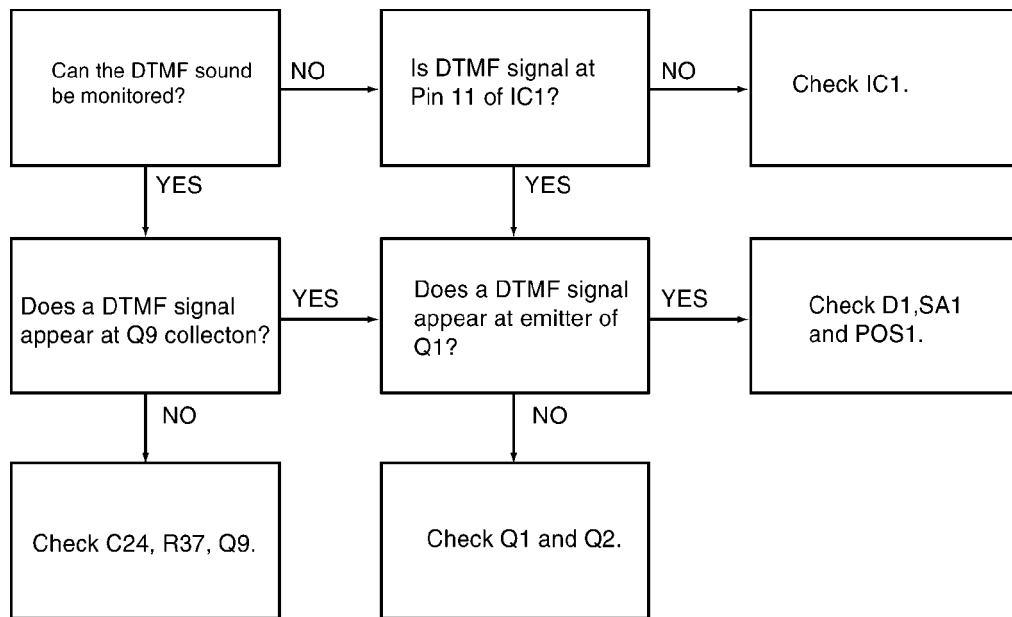
13.1. Service Hints

SYMPTOM	CURE
No Tone Dialing.	Check IC1, Q3, Q9, R37, R38, R34 and R35.
Dead.	Check IC1, Q2 and Q1.
Rings, no dial tone or tone dial.	Check Q1, Q2, D1.
No rings.	Check C1, R1, R3 and IC2.

13.2. Problems With the Handset



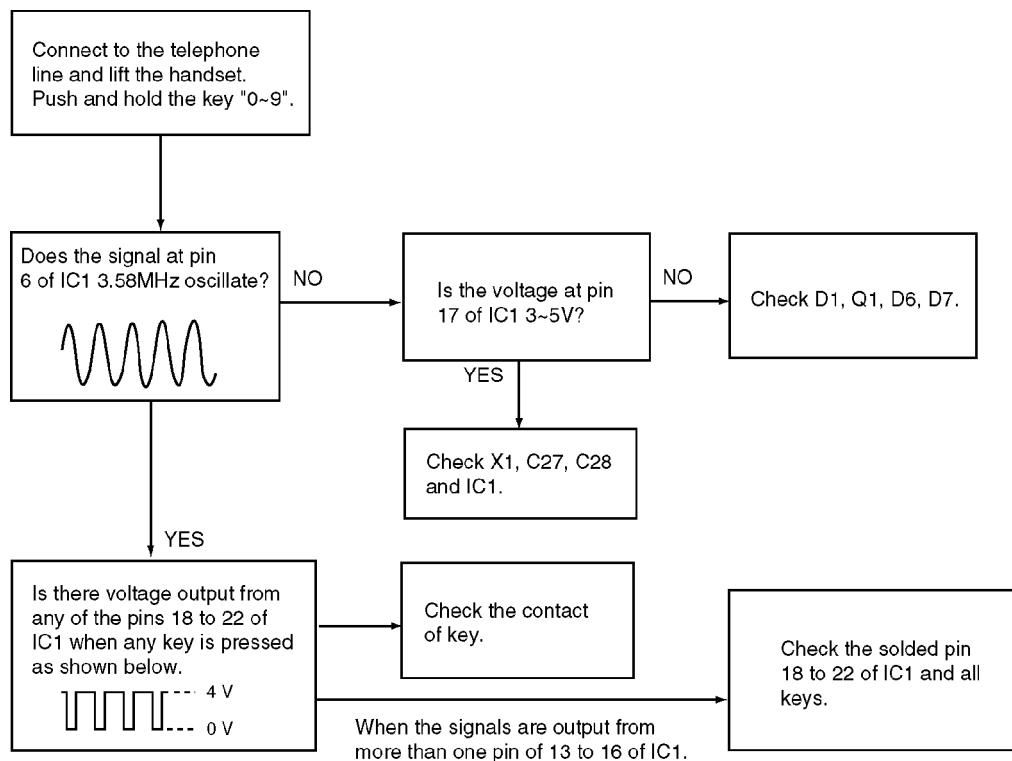
13.3. Tone Dialing Problems



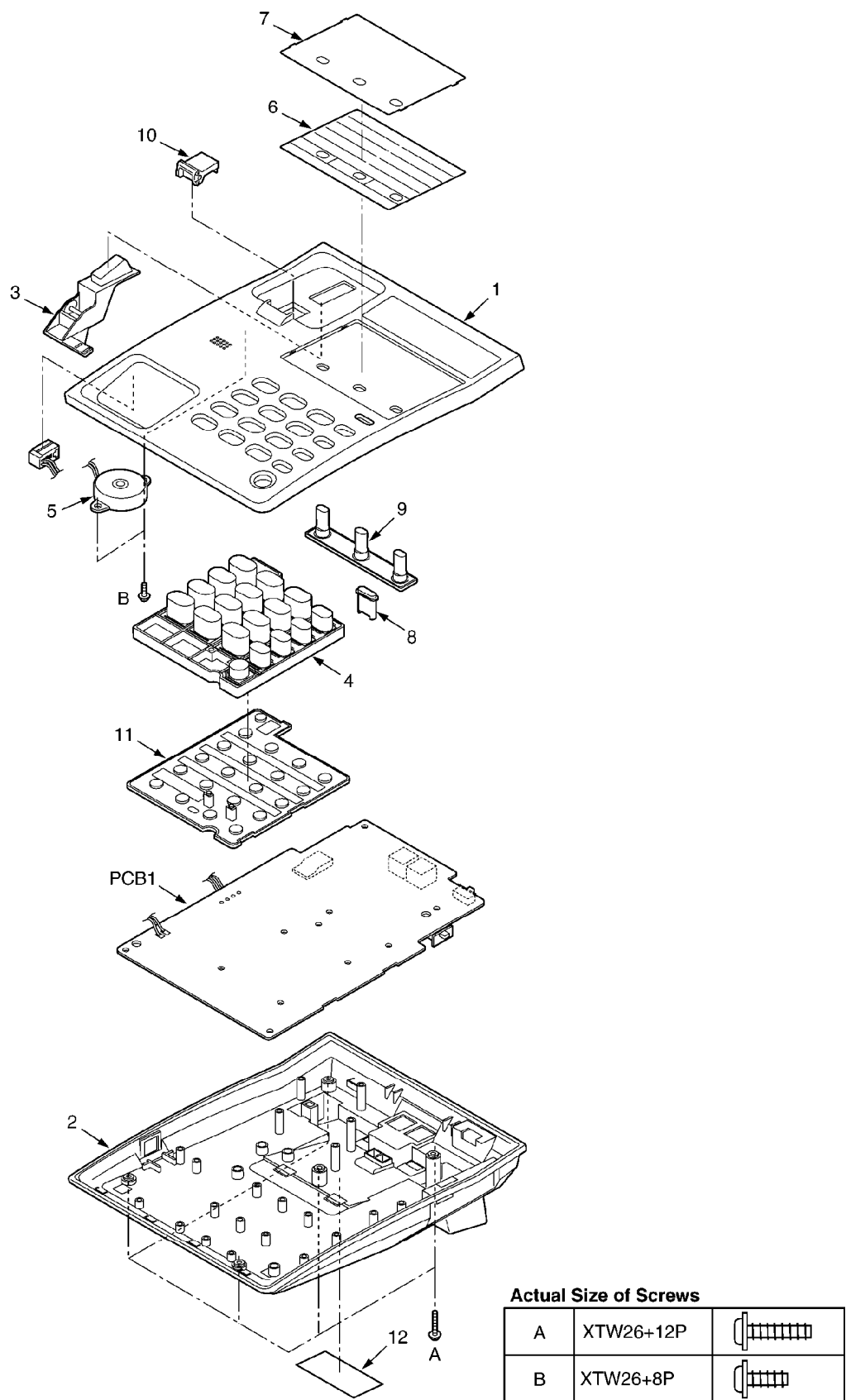
13.4. Problems With Ringer

Check R1, C1, IC2, R3, C37, R2, C3, C2.

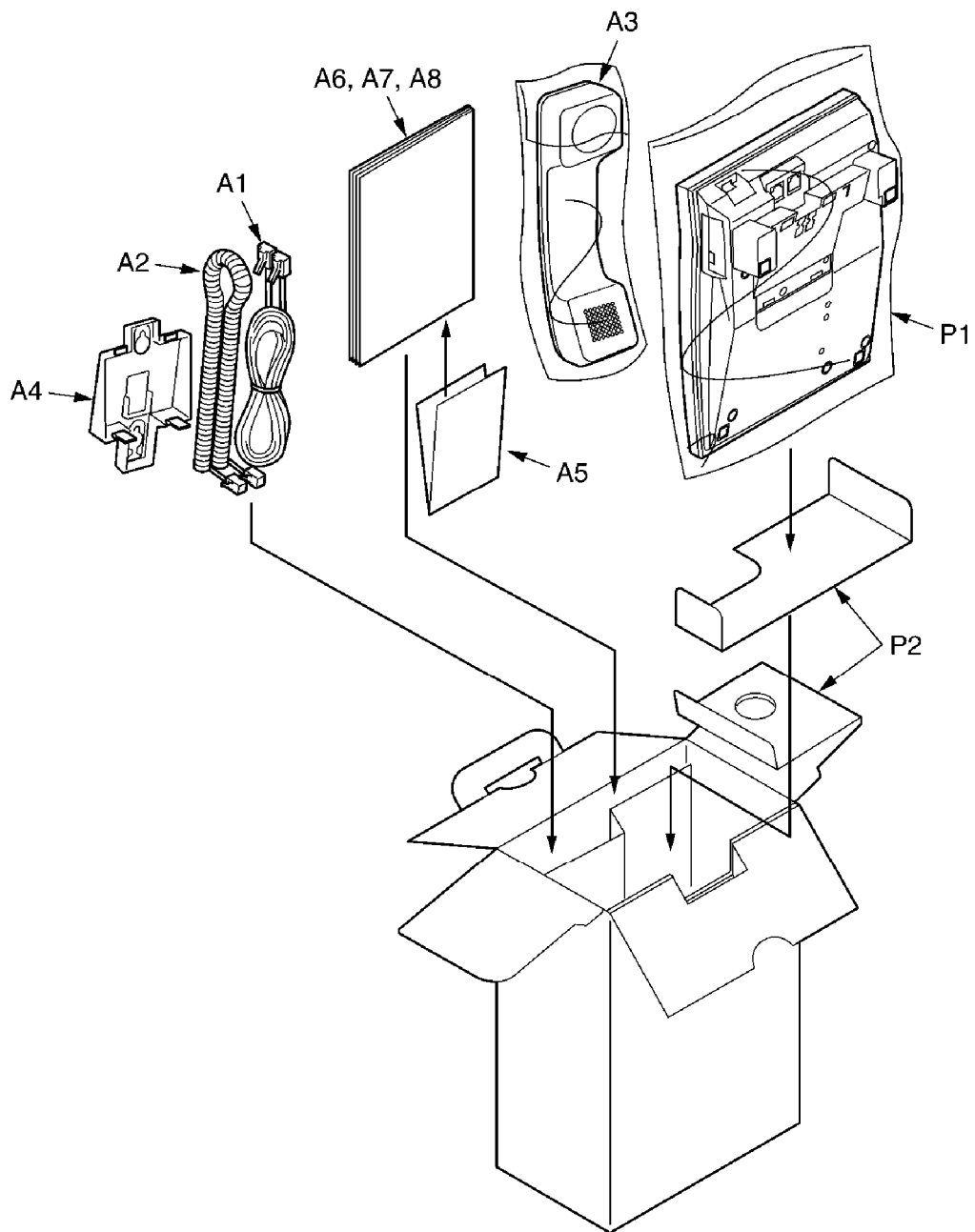
13.5. How to Check the IC1 (Scanning to the key)



14. CABINET AND ELECTRICAL PARTS LOCATION



15. ACCESSORIES AND PACKING MATERIALS



16. REPLACEMENT PARTS LIST

Note:


1. RTL (Retention Time Limited)

The marking (RTL) indicates that the Retention Time is limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws governing parts and product retention.

At the end of this period, the assembly will no longer be available.

2. Important safety notice

Components identified by the  mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.

3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.

4. RESISTORS & CAPACITORS

Unless otherwise specified;

All resistors are in ohms (Ω) K=1000 Ω , M=1000k Ω

All capacitors are in MICRO FARADS (μ F) P= μ μ F

*Type & Wattage of Resistor

Type					
ERC:Solid		ERX:Metal Film		PQ4R:Carbon	
ERD:Carbon		ERG:Metal Oxide		ERS:Fusible Resistor	
PQRD:Carbon		ER0:Metal Film		ERF:Cement Resistor	
Wattage					
10,16:1/8W		14,25:1/4W		12:1/2W	
				1:1W	
				2:2W	
				3:3W	
*Type & Voltage of Capacitor					
Type					
ECFD:Semi-Conductor			ECCD,ECKD,ECBT,PQCBC : Ceramic		
ECQS:Styrol			ECQE,ECQV,ECQG : Polyester		
PQCUV:Chip			ECEA,ECSZ : Electrolytic		
ECQMS:Mica			ECQP : Polypropylene		
Voltage					
ECQ Type		ECQG ECQV Type	ECSZ Type	Others	
1H: 50V		05: 50V	0F:3.15V	0J :6.3V	1V :35V
2A:100V		1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V		2:200V	1V:35V	1C :16V	1J :63V
2H:500V			0J:6.3V	1E,25:25V	2A :100V

16.1. Base Unit

16.1.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQKM10508W1	UPPER CABINET	S
2	PQYF10527Y1	LOWER CABINET	S
3	PQBH10036Z1	HOOK BUTTON	S
4	PQBX10350Z1	21 KEY BUTTON	S
5	L0DDFD000002	RINGER	
6	PQGD10163Z	TEL CARD	
7	PQGV10040Z	TEL CARD COVER	
8	PQHR10875Z	LED LENS	
9	PQSX10189Z	RUBBER SWITCH, 3 KEY	
10	PQKE10070Z3	H/S HOLDER	S
11	PQSX10186X	RUBBER SWITCH, 20 KEY	
12	PQGT15159Z	NAME LABEL	

16.1.2. MAIN P.C.BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PQWPTS100EXW	MAIN P.C BOARD ASS'Y (RTL)	
		(ICS)	
IC1	C1CA00000250	IC	
IC2	PQVILS1240A	IC	
		(TRANSISTORS)	
Q1	2SA1625	TRANSISTOR(SI)	S
Q2	PQVT2N6517CA	TRANSISTOR(SI)	S
Q3	2SC2120	TRANSISTOR(SI)	S
Q4	2SD1819A	TRANSISTOR(SI)	
Q5	2SD1819A	TRANSISTOR(SI)	
Q6	2SD1819A	TRANSISTOR(SI)	
Q7	2SD1819A	TRANSISTOR(SI)	
Q8	PQVTFB1A4M	TRANSISTOR(SI)	S
Q9	2SD1819A	TRANSISTOR(SI)	
Q10	UN5113	TRANSISTOR(SI)	S
Q11	2SD1819A	TRANSISTOR(SI)	
Q13	2SD1819A	TRANSISTOR(SI)	
Q14	2SD1819A	TRANSISTOR(SI)	
Q15	2SA1626	TRANSISTOR(SI)	S
Q16	2SD1819A	TRANSISTOR(SI)	
Q18	2SD1819A	TRANSISTOR(SI)	
Q19	2SD1819A	TRANSISTOR(SI)	
		(DIODES)	
D1	PQVDS1YB60F1	DIODE(SI)	S
D2	1SS119	DIODE(SI)	S
D5	MA4180	DIODE(SI)	
D6	PQVDHZS3A1	DIODE(SI)	S
D7	1SS119	DIODE(SI)	S
D8	MA4056	DIODE(SI)	
D9	1SS119	DIODE(SI)	S
D10	1SS119	DIODE(SI)	S
D11	1SS119	DIODE(SI)	S
		(LED)	
LED1	PQVDSML210LT	LED	
		(CONNECTORS)	
JJ101	PQJJ1T020Z	JACK	
JJ102	PQJJ1T020Z	JACK	
JJ103	PQJJ1T030Z	JACK	
		(SWITCHES)	
SW1	PQSH2B105Z	HOOK SWITCH	
SW3	PQSS3A17W	SLIDE SWITCH	
SW25	PQSS3A17W	SLIDE SWITCH	
		(VARIABLE RESISTORS)	
VR1	PQNVZ6TLTB13	VARIABLE RESISTOR	S
VR2	EVNDXAA03B55	VARIABLE RESISTOR	
		(OTHERS)	
SA1	PQVDDSS301L	VARISTOR	S
X1	PQVBZTA3.58M	CRYSTAL OSCILLATOR	
		(RESISTORS)	
R1	ERDS1VJ152	1.5k	
R2	ERJ3GEYJ223	22k	
R3	ERJ3GEYJ331	330	
R4	ERJ3GEYJ103	10k	

Ref. No.	Part No.	Part Name & Description	Remarks
R5	ERDS2TJ564	560k	
R6	ERDS2TJ683	68k	
R7	ERJ3GEYJ104	100k	
R8	ERJ3GEYJ104	100k	
R9	ERDS2TJ332	3.3k	
R10	ERJ3GEYJ392	3.9k	
R11	ERJ3GEYJ822	8.2k	
R12	ERJ3GEYJ222	2.2k	
R13	ERJ3GEYJ560	56	
R14	ERDS1TJ150	15	S
R15	ERJ3GEYJ103	10k	
R16	ERJ3GEYJ475	4.7M	
R17	ERJ3GEYJ560	56	
R18	ERJ3GEYJ392	3.9k	
R19	ERJ3GEYJ333	33k	
R20	ERJ3GEYJ224	220k	
R21	ERJ3GEYJ273	27k	
R22	ERJ3GEYJ103	10k	
R23	ERJ3GEYJ335	3.3M	
R24	ERJ3GEYJ272	2.7k	
R25	ERJ3GEYJ331	330	
R26	ERJ3GEYJ333	33k	
R27	ERJ3GEYJ334	330k	
R28	ERJ3GEYJ561	560	
R30	ERJ3GEYJ272	2.7k	
R32	ERJ3GEYJ224	220k	
R33	ERJ3GEYJ333	33k	
R34	ERJ3GEYJ335	3.3M	
R35	ERDS2TJ392	3.9k	
R36	ERJ3GEYJ121	120	
R37	ERJ3GEYJ824	820k	
R38	ERJ3GEYJ332	3.3k	
R40	ERDS2TJ685	6.8M	
R41	ERJ3GEYJ183	18k	
R42	ERJ3GEYJ153	15k	
R48	ERJ3GEYJ474	470k	
R49	ERJ3GEYJ564	560k	
R50	ERJ3GEYJ105	1M	
R51	ERDS2TJ390	39	
R52	ERJ3GEYJ224	220k	
R53	PQRD1VJ102	1k	S
R54	ERDS2TJ120	12	
R62	ERJ3GEYJ154	150k	
R65	ERJ3GEYJ333	33k	
R66	ERJ3GEYJ474	470k	
R70	ERDS2TJ472	4.7k	
R71	ERDS2TJ472	4.7k	
R72	ERJ3GEYJ474	470k	
R74	ERJ3GEYJ474	470k	
R80	ERJ3GEYJ103	10k	
R81	ERJ3GEYJ102	1k	
R82	ERJ3GEYJ102	1k	
R83	ERJ3GEYJ102	1k	
R84	ERJ3GEYJ102	1k	

Ref. No.	Part No.	Part Name & Description	Remarks
R85	ERJ3GEYJ102	1k	
R188	ERJ3GEYJ104	100k	
		(CAPACITORS)	
C1	ECQE2155T370	37p	
C2	ECEA1HKS100	10	S
C3	ECUV1C563KBV	0.056	
C4	ECKD2H681KB	680p	S
C5	ECKD2H681KB	680p	S
C6	ECUV1H103KBV	0.01	
C7	ECUV1H103KBV	0.01	
C8	ECEA1VU330	33	S
C9	ECEA1EU470	47	S
C10	ECUV1C393KBV	0.039	
C11	ECEA1AU221	220	S
C12	ECUV1C104KBV	0.1	
C13	ECUV1H102KBV	0.001	
C14	ECUV1H331JCV	330p	S
C15	ECUV1C104KBV	0.1	
C16	ECUV1C104KBV	0.1	
C17	ECUV1C104KBV	0.1	
C18	ECEA1HU100	10	S
C19	ECUV1H333KBV	0.033	S
C20	ECUV1H103KBV	0.01	
C21	ECUV1H332KBV	0.0033	
C22	ECUV1H470JCV	47p	
C23	ECUV1C104KBV	0.1	
C24	ECUV1H101JCV	100p	
C25	ECUV1H103KBV	0.01	
C26	ECEA0JWA102	1000	
C27	ECUV1H330JCV	33p	
C28	ECUV1H330JCV	33p	
C29	ECUV1H102KBV	0.001	
C30	ECUV1H102KBV	0.001	
C31	ECUV1C104KBV	0.1	
C33	ECUV1H103KBV	0.01	
C34	ECUV1C563KBV	0.056	
C36	ECUV1H102KBV	0.001	
C37	ECEA1HKA010	1	
C38	ECUV1H103KBV	0.01	
C40	ECUV1H102KBV	0.001	
C41	ECUV1H102KBV	0.001	
C42	ECUV1A224KBV	0.22	
C45	ECUV1H471JCV	470p	S
C46	ECUV1H471JCV	470p	S
C47	ECUV1H471JCV	470p	S
C48	ECUV1H471JCV	470p	S
C49	ECUV1H471JCV	470p	S
C50	ECEA1HKS100	10	S
C61	ECUV1A224KBV	0.22	
C63	ECUV1C104KBV	0.1	

16.2. ACCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQJA10075Z	TEL CORD	
A2	PQJA212M	CURL CORD	
A3	PQJXC0202Z	HANDSET	
A4	PQKL10038Y1	WALL MOUNT ADAPTOR	S
A5	PQQW12610Z	LEAFLET	
A6	PQQX13329Z	INSTRUCTION BOOK (for English)	
A7	PQQX13330Z	INSTRUCTION BOOK (for Spanish)	
A8	PQQX13331Z	INSTRUCTION BOOK (for Dutch)	
P1	PQPH89Y	POLY BAG	
P2	PQPK13677Z	GIFT BOX	

17. FOR SCHEMATIC DIAGRAM (**SCHEMATIC DIAGRAM**)

1. DC voltage measurements are taken with electronic voltmeter from negative terminal.
(Add 40 mA to telephone line from the loop simulator.)
2. This schematic diagram may be modified at any time with the development of new technology.

Important Safety Notice:
Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

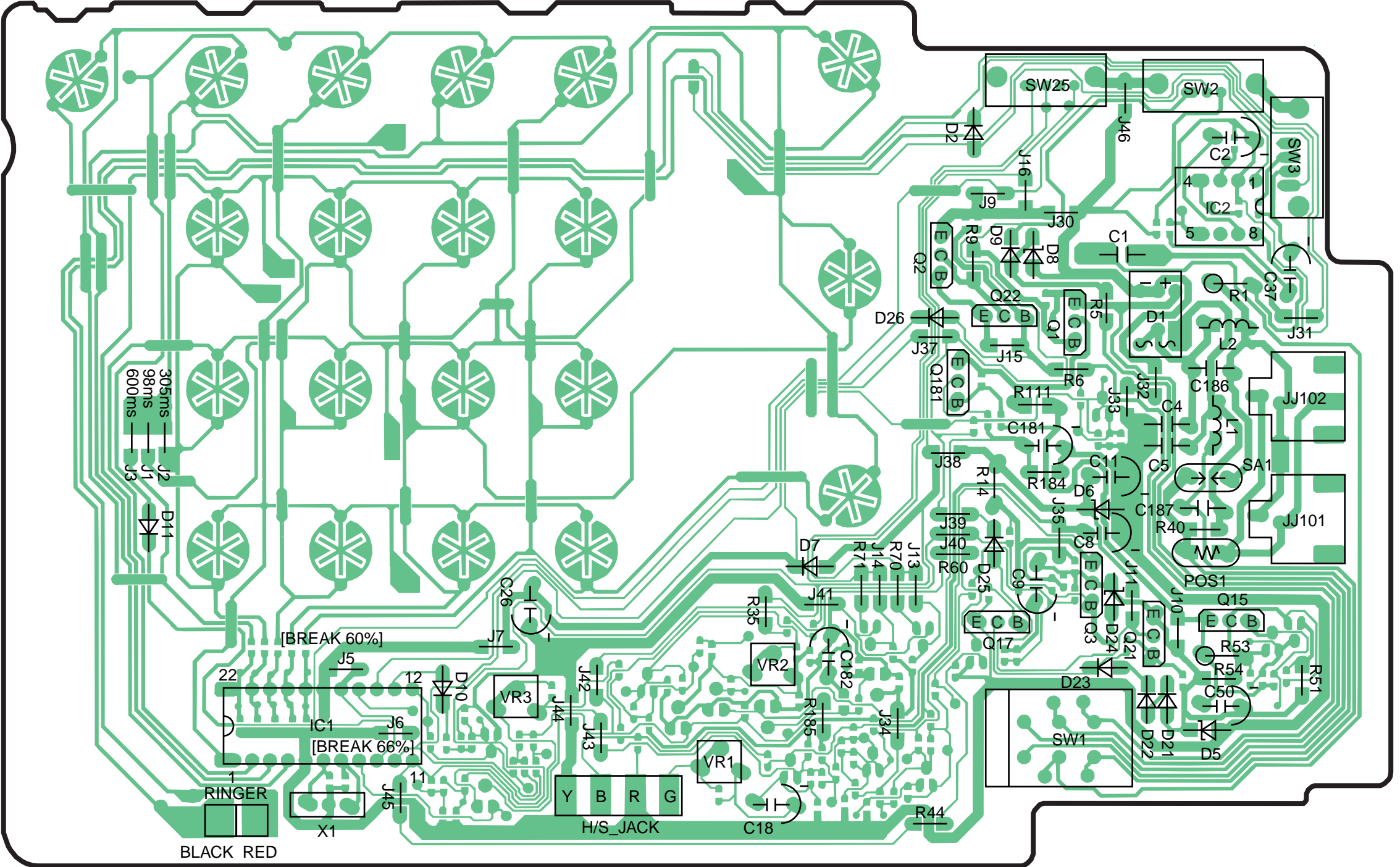
18. SCHEMATIC DIAGRAM

19. CIRCUIT BOARD

19.1. Component View

19.2. Flow Solder Side View

H.M / KXTS100EXW

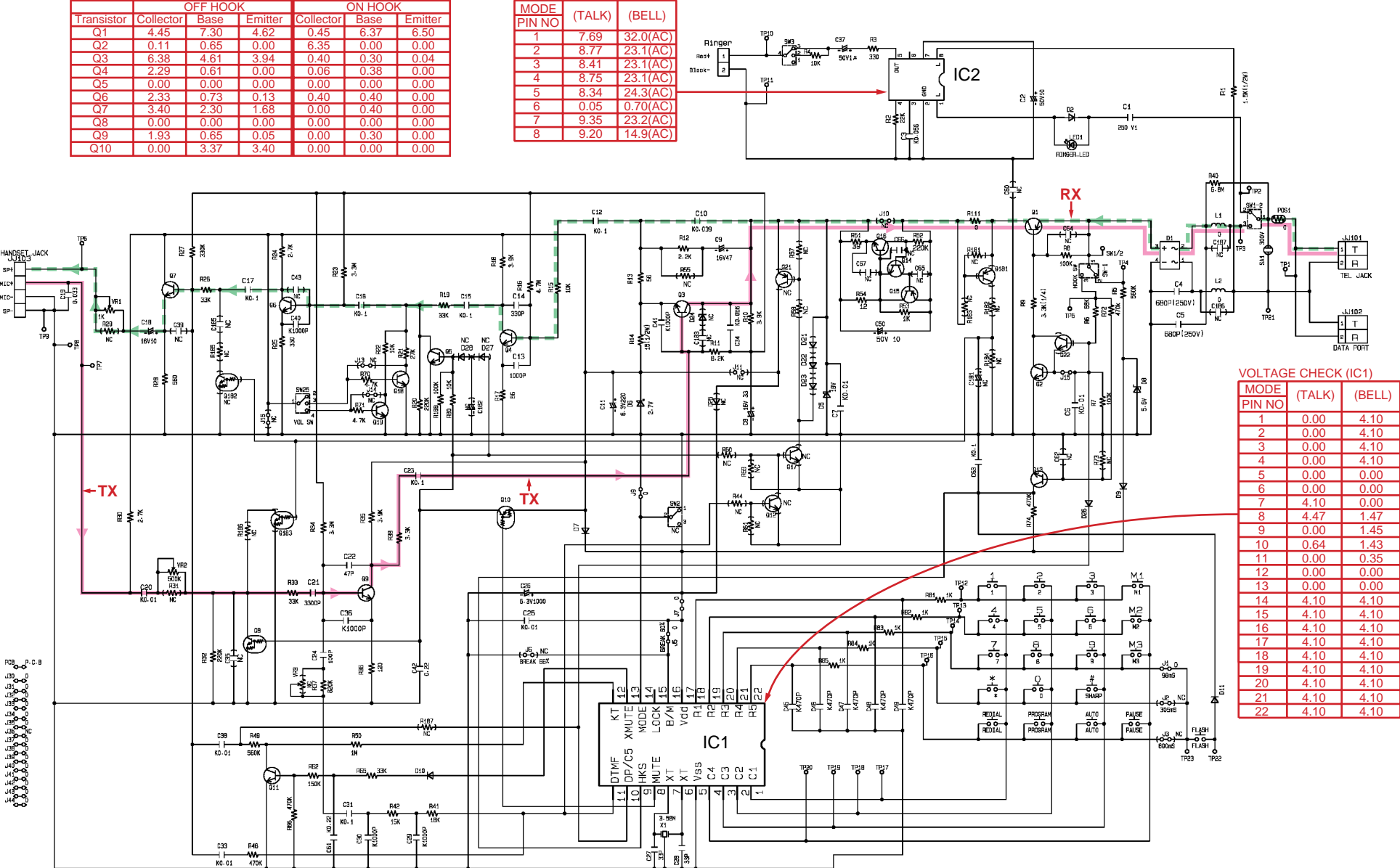


TRANSISTOR VOLTAGE CHECK (MAIN PCB)

OFF HOOK			ON HOOK		
Transistor	Collector	Base	Collector	Base	Emitter
Q1	4.45	7.30	4.62	0.45	6.37
Q2	0.11	0.65	0.00	6.35	0.00
Q3	6.38	4.61	3.94	0.40	0.30
Q4	2.29	0.61	0.00	0.06	0.38
Q5	0.00	0.00	0.00	0.00	0.00
Q6	2.33	0.73	0.13	0.40	0.40
Q7	3.40	2.30	1.68	0.00	0.40
Q8	0.00	0.00	0.00	0.00	0.00
Q9	1.93	0.65	0.05	0.00	0.30
Q10	0.00	3.37	3.40	0.00	0.00

VOLTAGE CHECK (IC2)

MODE PIN NO	(TALK)	(BELL)
1	7.69	32.0(AC)
2	8.77	23.1(AC)
3	8.41	23.1(AC)
4	8.75	23.1(AC)
5	8.34	24.3(AC)
6	0.05	0.70(AC)
7	9.35	23.2(AC)
8	9.20	14.9(AC)



VOLTAGE CHECK (IC1)

MODE PIN NO	(TALK)	(BELL)
1	0.00	4.10
2	0.00	4.10
3	0.00	4.10
4	0.00	4.10
5	0.00	0.00
6	0.00	0.00
7	4.10	0.00
8	4.47	1.47
9	0.00	1.45
10	0.64	1.43
11	0.00	0.35
12	0.00	0.00
13	0.00	0.00
14	4.10	4.10
15	4.10	4.10
16	4.10	4.10
17	4.10	4.10
18	4.10	4.10
19	4.10	4.10
20	4.10	4.10
21	4.10	4.10
22	4.10	4.10

